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(54) CONFECTIONARY TABLETS

(71) We, LIFE SAVERS, INC., a Corporation organised under the laws of the State of Delaware, United States of America of 40 West 57th Street, New York, New York 10019, United States of America, do hereby declare that the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to particularly described in and by the following statement:—

The present invention relates to novel chewable pressed tablets and provides such tablets which contain xylitol and one or more other polyhydric alcohols or polyols.

Xylitol is a natural sugar-alcohol known for its use as a sugar substitute, particularly for children, because it is non-cariogenic. Thus, xylitol has been employed as a sugar-substitute in milk chocolates, chewing gum, ice cream, gum-type candies, puddings, jams, jellies and marmalade.

It has also been suggested to use xylitol in pressed tablets. Unfortunately, however, it has been found that xylitol possesses very poor tabletting characteristics and therefore compressed tablets containing the same have never been satisfactorily produced.

The use of sorbitol as a sugar substitute in compressed tablets is well known. However, the use of sorbitol suffers from the drawback that it forms a very hard tablet which may be too brittle or otherwise undesirable.

It has now been found that chewable pressed tablets containing xylitol as a sugar substitute may be formed in an efficient and economic manner by employing another polyol, such as sorbitol, in combination with the xylitol. Surprisingly, the pressed tablet formed is softer than and has improved texture over conventional pressed tablets containing sorbitol alone as a sugar-substitute. While being harder than a tablet containing xylitol alone, the xylitol tablet being too soft and friable to have any practical use.

The present invention provides a dry-blended admixture directly compressed to a chewable tablet, said tablet comprising xylitol in an amount of from 10 to 90% by weight of the tablet and at least one other polyol in an amount of from 10 to 90 per cent by weight.

The present invention further provides a process for preparing a chewable compressed tablet which comprises dry-blending xylitol in an amount of from 10 to 90 per cent by weight and at least one other polyol in an amount of from 10 to 90 per cent by weight of the tablet and directly comprising the dry-blended mixture into a chewable tablet.

A chewable pressed tablet or pressed mint-type candy of the invention preferably contains xylitol in an amount from 30 to 70 per cent by weight of the tablet, and at least one other polyol in an amount from 30 to 70 per cent by weight of the tablet. In addition, the tablet may include flavoring and/or coloring agents, medicaments, preservatives and the like, as will be apparent to those skilled in the art.

The polyols suitable for use with the xylitol include, but are not limited to, sorbitol, mannitol, maltitol and hydrogenated starch hydrolysates, and combinations thereof, with sorbitol being preferred.

In addition to the xylitol and other polyol, the confections of the invention may include synthetic sweeteners, such as sodium saccharin, calcium saccharin, dihydrochalcones, glycyrrhizin, glycyrrhizic acid ammonium salt, L-aspartyl-L-phenylalanine (methyl ester), as well as *Stevia rebaudiana* (Stevioside), *Richardella dulicifica* (Miracle Berry), *Dioscoreophyllum cumminsii* (Seredipity Berry), cyclamates and the like, subject to such use being permitted by law.

The confection in accordance with the invention may also comprise flavoring agents in an amount of from about 0.01 to about 10% by weight and preferably from about 0.2 to about 0.25% by weight, e.g., oil of wintergreen, oil of spearmint, oil of peppermint, clove oil, bay oil, anise oil,

eucalyptus oil, thyme oil, cedar leaf oil, cinnamon oil, oil of nutmeg, oil of sage, oil of bitter almonds and cassia oil and mixed fruit, natural and artificial fruit flavors such as ascorbic acid, citric acid, lactic acid, adipic acid, malic acid and tartaric acid spice oils, etc. The confection may also contain a tableting lubricant, such as calcium stearate or magnesium stearate. Thus, a preferred confection of the invention may have the following ingredients:

	Parts by weight
Xylitol	35—60
Sorbitol	35—60
Flavoring	0.01—2
Lubricant	0.1—3

The following Examples represent preferred embodiments of the present invention.

Example 1
Preparation of a Chewable Pressed Confection

	Parts by Weight
Xylitol	470
Sorbitol	470
Malic Acid	55
Magnesium stearate	18
Raspberry Flavoring	4
FD & C Red #2 Lake Dye	0.4
FD & C Blue #1 Lake Dye	0.04

The above ingredients are blended thoroughly and tabletted on a conventional tablet press.

When compared against control pressed mints containing no sorbitol or no xylitol, the mint of Example 1 is observed to have better texture, is softer and is more readily compacted than are the control mints.

Example 2
Preparation of a Chewable Vitamin Tablet

	Parts by Weight
Xylitol	470
Sorbitol	470
Ascorbic Acid	55
Magnesium stearate	18
Orange Flavor	5
FD & C Yellow #6 Lake Dye	1

The above ingredients are blended thoroughly and tabletted on a conventional tablet press.

When compared against control chewable vitamins containing no sorbitol or no xylitol, the chewable vitamin of Example 2 is observed to have better texture, is softer and is more readily compacted than are the control vitamins.

Example 3
Preparation of a Chewable Vitamin

	Parts by Weight
Xylitol	470
Mannitol	470
Ascorbic Acid	55
Magnesium stearate	18
Orange Flavor	5
FD & C Yellow #6 Lake Dye	1

The above ingredients are blended thoroughly and tabletted on a conventional tablet press.

When compared against control chewable vitamins containing no mannitol or no xylitol, the chewable vitamin of Example 3 is observed to have better texture, is softer and is more readily compacted than are the control vitamins.

Example 4
Preparation of a Chewable Aspirin

	Parts by Weight
Powdered Aspirin	150
Sorbitol/Xylitol	597/256
Glycine	20
Orange Flavor	7
Stearic Acid	20
FD & C Yellow #6 Lake Dye	1

The above ingredients are blended thoroughly and tabletted on a conventional tablet press.

When compared against control chewable aspirin containing no sorbitol or no xylitol, the chewable aspirin of Example 4 is observed to have better texture, is softer and is more readily compacted than are the control chewable aspirins.

Example 5
Comparison of Pressed Mint Confections

Control A
1000 parts xylitol
4 parts peppermint oil
10 parts magnesium stearate

Control B
1000 parts sorbitol
4 part peppermint oil
10 parts magnesium stearate

Composition of the invention
500 parts xylitol
500 parts sorbitol
4 parts peppermint oil
10 parts magnesium stearate

Each end of the three above composition was prepared by dry-blending the various ingredients thereof and thereafter directly compressing the dry-blended admixture into a tablet using a conventional tablet press. The tablet in each case was of the same weight and size (thickness). The results obtained are as follows.

The Control A tablet containing only xylitol was extremely friable, very soft and not capable of withstanding the slightest abuse, such as encountered during conventional packaging procedures.

The Control B tablet containing sorbitol alone was not sweet enough and was extremely hard and unsuitable as a chewable tablet.

The invention composition containing a combination of xylitol and sorbitol had a pleasant sweet taste, was soft enough to be of a chewable nature, but hard enough to withstand the normal amount of abuse received during a standard packaging operation.

We are aware of the Artificial Sweeteners in Food Regulations 1969 (S. I. 1817) and insofar as this invention relates to the manufacture for sale in the United Kingdom and/or sale in the United Kingdom of foodstuffs sweetened by sweeteners mentioned herein we make no claim to use the invention in contravention of the law.

WHAT WE CLAIM IS:—

1. A dry-blended admixture directly compressed to form a chewable tablet, said tablet comprising xylitol in an amount of from 10 to 90 per cent by weight of the tablet and at least one other polyol in an amount of from 10 to 90 per cent by weight of the tablet.

2. A tablet as claimed in claim 1 wherein the said other polyol is sorbitol, mannitol or a mixture thereof.

3. A tablet as claimed in claim 1 or claim 2 which further includes a flavoring or coloring agent or a mixture thereof.

4. A tablet as claimed in any of the preceding claims which further includes a medicament dispersed therein.

5. A tablet as claimed in any of the preceding claims, wherein the xylitol is present in a weight ratio of from 2:1 to 1:2 with respect to the said other polyol.

6. A tablet as claimed in any of the preceding claims comprising xylitol in an amount of from 30 to 70 per cent by weight of the tablet and sorbitol or mannitol in an amount of from 30 to 70 per cent by weight of the tablet.

7. A tablet as claimed in any of the preceding claims, wherein the xylitol is present in an amount of from 35 to 60 per cent by weight of the tablet, the polyol is sorbitol which is present in an amount of from 35 to 60 per cent by weight of the tablet and which further includes flavoring in an amount of from 0.01 to 2 per cent by weight of the tablet and a lubricant in an amount of from 0.1 to 3 per cent of the tablet.

8. A process for preparing a chewable compressed tablet which comprises dry-blending xylitol in an amount of from 10 to 90 per cent by weight of the tablet and at least one other polyol in an amount of from 10 to 90 per cent by weight of the tablet and directly compressing the dry-blended mixture into a chewable tablet.

9. A process as claimed in claim 8, wherein the said other polyol is sorbitol or mannitol.

10. A process as claimed in claim 8 or claim 9, which comprises dry-blending xylitol, the said other polyol, a lubricant and a flavoring agent and directly compressing the dry-blended mixture into a chewable tablet.

11. A process as claimed in claim 8 or claim 9, which comprises dry-blending xylitol, the said other polyol and a medicament and directly compressing the dry-blended mixture into a chewable tablet.

12. A process as claimed in any of claims 8 to 11, wherein the xylitol is present in a weight ratio with respect to the said other polyol of from 2:1 to 1:2.

13. A process as claimed in claim 8, wherein xylitol is an amount of from 30 to 70 per cent by weight of the tablet and sorbitol or mannitol in an amount of from 30 to 70 per cent by weight of the tablet are dry-blended and the dry-blended mixture directly compressed into a chewable tablet.

14. A process as claimed in claim 8, wherein xylitol in an amount of form 35 to 60 per cent by weight of the tablet, sorbitol in an amount of form 35 to 60 per cent by weight of the tablet, flavoring in an amount of from 0.01 to 2 per cent by weight of the tablet and a lubricant in an amount of form 0.1 to 3 per cent by weight of the tablet are dry-blended and the dry-blended mixture directly compressed into a chewable tablet.

15. A tablet as claimed in claim 1, substantially as herein described.

16. A process as claimed in claim 8 for making tablets, substantially as herein described.

17. A tablet as claimed in any of claims 1 to 7 and 15, when prepared using a process as claimed in any of claims 8 to 14 and 16.

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